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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,762	01/22/2004	Russell Hill	KEGB:004US	3116

7590 07/24/2007
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EXAMINER

MARCANTONI, PAUL D

ART UNIT	PAPER NUMBER
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1755

MAIL DATE	DELIVERY MODE
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07/24/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/762,762	Applicant(s) HILL ET AL.	
	Examiner Paul Marcantoni	Art Unit 1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-118 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-43, and 107-118 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-118 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Objection to the Specification:

Fly Ash

The applicants' definition of fly ash is objected to on page 11 of their original specification:

The applicants define fly ash to include ash materials including those not from coal combustion such as wood ash, municipal solid waste ash, etc. Fly ash is limited to only coal combustion ash (Class C or Class F) and does not include other ash materials.

Applicants should correct their definition of fly ash because a term cannot be used when given a meaning which is repugnant to its usual meaning. In re Hill, 73 USPQ 482 (CCPA 1947). Fly ash only refers to coal combustion ash and other types of combustion ash are not fly ash contrary to applicants improper definition.

Air Entrainment:

The examiner objects to applicants' definition of air entrainment as inclusive of other inert gases such as nitrogen on page 17, lines 8-11. Air entrainment refers to specifically and only air and correction in the specification is deemed necessary. A term cannot be used when given a meaning which is repugnant to its usual meaning. In re Hill, 73 USPQ 482 (CCPA 1947). If applicants wish to include entrainment other than air they should probably have defined it gaseous entrainment or gas entrainment. Air entrainment refers to air alone.

Objection Claim 1: Applicants should amend claim 1 to 2 vol.% from "2% vol".

35 USC 103:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

103 rejection #1:

Claims 1-9, 11-43, and 107-118 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 56022665 A (Nippon Oils and Fats Co LTD), DE 19528912 (Furusawa et al.), WO 85/01500 (Nicholson), Naji et al. '266 B1, Young '389 A1, Boggs '358 B1, MacDonald '352, Hoarty et al. '362, Okimura et al. '978, or Chugh '189 B1.

JP '665 teaches an air entraining agent for concrete comprising anionic surfactant and a glycol ether in amounts overlapping applicants' claims. This meets applicants' method of making an air entraining cement mixture containing fly ash since this combination of components can be used with fly ash cement (contains fly ash) and Portland cement wherein fly ash itself is a *conventional* aggregate additive (See Also MPEP 2144.03 regarding official notice or conventional in the art). The anionic surfactant meets the limitation of air entraining agent and the glycol ether the sacrificial agent. The use of a sacrificial agent (or absorbent or scavenger agent) to reduce the tendency of absorption of the air entraining agent is not a new concept either because this concept was known and conventional as well at the time of applicants' invention (see again MPEP 2144.03). It is known in the art that excess carbon in fly ash absorbs

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air entrainers and thus reduces the effectiveness of air entrainment (what applicants call the "detrimental effects of components of fly ash on air entrainment activity in their claim 1 yet do not clearly specify this is exactly what they are referring to in claim 1). It is further the examiner's position that the glycol ether is even listed as their so called "sacrificial agent" in claim 114 so it is clear that it would also cause less than 2% volume additional air entrainment in the cementitious mixture.

DE 19528912 teaches an aeration or air entraining mixture for a cement containing high levels of residual carbon comprised of fatty acid surfactant, non-ionic surfactant, and an additional component selected from salts of alkyl sulfonates, alkylaryl sulfonates and sulfate esters of higher alcohols and resonates. It is the examiner's position that the first two components could represent the air entraining agent and the last component (the sacrificial agent) or the first component (fatty acid surfactant) the air entrainer and the last two components the sacrificial agents (non-ionic surfactant and additional component) or the non-ionic surfactant could be the air entrainer and the last two components the sacrificial agents. The sacrificial agents of applicants' claimed invention are the same as those in DE '912 and thus the amount of additional air entrainment should also be less than 2 vol% additional air entrainment. For the same reasons as was stated in JP '665, it is known in the art that excess carbon in fly ash absorbs air entrainers and thus reduces the effectiveness of air entrainment (what applicants call the "detrimental effects of components of fly ash on air entrainment activity in their claim 1 yet do not clearly specify this is exactly what they are referring to in claim 1).

Nicholson (WO 85/01500) teach a process of making an air entraining cement mixture comprising fly ash (see p.6, lines 13-14) and teaches air entrainers and sacrificial agents consistent with what applicants are claiming for their instant invention. Further, the sacrificial agents are the same as those claimed by applicants and listed in their specification and thus the properties of less than 2% additional air entrainer should be the same. For the same reasons as was stated in JP '665, it is known in the art that excess carbon in fly ash absorbs air entrainers and thus reduces the effectiveness of air entrainment (what applicants call the "detrimental effects of components of fly ash on air entrainment activity in their claim 1 yet do not clearly specify this is exactly what they are referring to in claim 1).

Naji et al. '266 B1 teach air entraining a cement mixture containing fly ash (see col.3, line 37) by mixing one "or more" non-ionic, cationic and anionic surfactants such as sodium salts of alpha olefin sulphonate and sodium lauryl sulphonate (col.3, lines 20-27). Note that together they can be the air entrainer but also either one could also be the sacrificial agent in accordance with applicants' invention. One of the air entrainers could function as the sacrificial agent. For the same reasons as was stated in JP '665, it is known in the art that excess carbon in fly ash absorbs air entrainers and thus reduces the effectiveness of air entrainment (what applicants call the "detrimental effects of components of fly ash on air entrainment activity in their claim 1 yet do not clearly specify this is exactly what they are referring to in claim 1). Also, Naji et al. teach adding cellulose, starch, alginate, polyvinyl alcohol, polyethylene oxide, and polypropylene oxide which would also function as the applicants' sacrificial agents

(col.3, lines 10-20). Note for example that applicants broadly claim "alcohols" as a candidate for sacrificial agent in claim 6 and polyvinyl alcohol is an alcohol. Thus, it would also be a sacrificial agent that causes less than 2% by volume additional air entrainment.

Young '389 A1 also recognizes the same problem applicants are trying to overcome in their invention regarding difficulties in using fly ash containing excess carbon that reduces air entrainment in cement mixtures. Young teaches adding solid and/or liquid chemicals as sacrificial agents to mitigate the absorption potential of fly ash (see p.2, [0016]). Young further teaches that an example of these chemicals includes detergents that have surfactants and emulsifiers. This is inclusive of anionic surfactants such as sodium lauryl sulfate as well as non-ionic surfactants such as nonyl phenol ethoxylate surfacatant (NP-9) which is most effective as a sacrificial agent or absorption agent of the carbon containing ash (see p.4, [0047] and [0060]).

Boggs '358 B1 teach a method of pretreating fly ash for use in a cement mixture that is known and conventionally used in Portland cement concrete (see col.1, lines 20-52). Boggs solves the same problems applicants allege to find the solution for by using a sacrificial agent he calls a scavenger or adsorption agent that adsorbs onto the carbon and takes it away from adsorption of the air entraining agent. Thus, the air entrainment deleterious effects are greatly reduced. Boggs teaches using an aromatic carboxylic acid as his sacrificial agent or scavenger agent together with an air entrainment agent. The aromatic carboxylic acid is a sacrificial agent even claimed by applicants (see claims 4 and 6, for example) and thus its properties as sacrificial agent and causing less

than 2 vol% additional air entrainment in cement mixtures would have also been expected by one of ordinary skill in the art to be the same.

MacDonald '352 teaches air entrainment in cement mixes comprising high carbon fly ash and teaches adding a composition of high polymer protein powder, water, polyvinyl alcohol, and a soap gel solution (see col.3, lines 1-15). It is the examiner's position that polyvinyl alcohol can be construed as the sacrificial agent since applicants claim their sacrificial agent is an alcohol (see applicants' claim 6). The properties such as less than 2 vol% additional air entrainment would also have been expected since applicants state in claim 6 alcohol is an example of a sacrificial agent. Soap gel is a surfactant and would be construed as the air entrainer. Thus, MacDonald teaches applicants' claimed method.

Hoarty et al. '362 also teach air entraining a cement mixture of fly ash of carbon content by adding a water soluble C8 fatty acid salt as the air entrainer and sodium octanoate or potassium octanoate as the sacrificial agent (see claim 1 in col.4). The octanoate is the sacrificial agent since is present in amounts sufficient to stabilize entrained air and lower the rate of air loss. This can be accomplished by the octanoate literally used as the sacrificial agent, scavenger agent, or absorption agent for the carbon present in the fly ash which could reduce air entrainment.

Okimura et al. '978 teach a combination of polyoxyethylene sorbitan oleate (which is the air entrainer) and Vinsol resin which is a conventionally used air entrainer that could be the sacrificial agent (See Table 7, example 1 in col.5). Okimura et al. teach that the polyoxyethylene sorbitan oleate is not substantially adsorbed by

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unburned carbon contained in the fly ash and exhibits excellent air entraining effect (col.1 last paragraph). Note that applicants' sacrificial agent can be another air entrainer since it still could cause up to but not including 2 vol% air entrainment.

Chugh '189 B1 teach producing an air entrained fly ash containing cement mixture. Chugh teach Class C fly ash and fluidized bed combustion ash are part of the mixture (col.4 lines 10-22) as well as an air entrainer (see col.10, lines 35-40). Chugh teach that fluidized bed combustion ash (FBC) are present in amounts and proportions sufficient to reduce the negative effects of the presence of unburned carbon in the Class F fly ash. Thus, FBC is the sacrificial agent in Chugh.

103 Rejection #2:

Claims 1-9,11-43, and 107-118 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 56022665 A (Nippon Oils and Fats Co LTD), DE 19528912 (Furusawa et al.), WO 85/01500 (Nicholson), Naji et al. '266 B1, Young '389 A1, Boggs '358 B1, MacDonald '352, Hoarty et al. '362, Okimura et al. '978, or Chugh '189 B1 alone or in view of Young '389 A1 and Boggs '358 B1.

All of the primary references above teach the same components of air entrainer and sacrificial agent added to cement mixtures. This additional combination has been made to show that the purpose of adding a sacrificial agent to neutralize the detrimental effects of the fly ash (ie the carbon in the fly ash reducing air entrainment). Young and Boggs both teach that fly ash containing residual carbon is a problem reducing the effectiveness of air entrainment and that adding a sacrificial agent (or scavenger or adsorption agent) to adsorb the carbon and prevent it from having an effect on the air

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entrainer and thus the air entrainment properties of the cement mixtures is known.

Thus, the motivation for using a sacrificial agent for cement mixtures containing carbon residual fly ash is old and known in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Marcantoni whose telephone number is 571-272-1373. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Paul Marcantoni
Primary Examiner
Art Unit 1755